Kramer Electronics, Ltd.

USER MANUAL

Model:

SL-12

Master Room Controller

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Thank you for purchasing the Kramer MultiTOOLS® **SL-12** *Master Room Controller*, which is ideal for:

- Controlling multimedia rooms, such as classrooms, auditoriums, conference rooms, and so on, while enabling remote control and management of the AV equipment
- Production studios, rental, and staging

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

Go to http://www.kramerelectronics.com to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **SL-12** away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerelectronics.com/support/recycling/*.

2.4 Quick Start

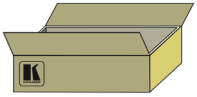
This quick start chart summarizes the basic setup and operation steps.

SL-12 Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- ☑ The **SL-12** Master Room Controller
- ☑ 1 Power supply 12V DC)
- ☑ 1 Quick start guide
- ☑ 4 Rubber feet

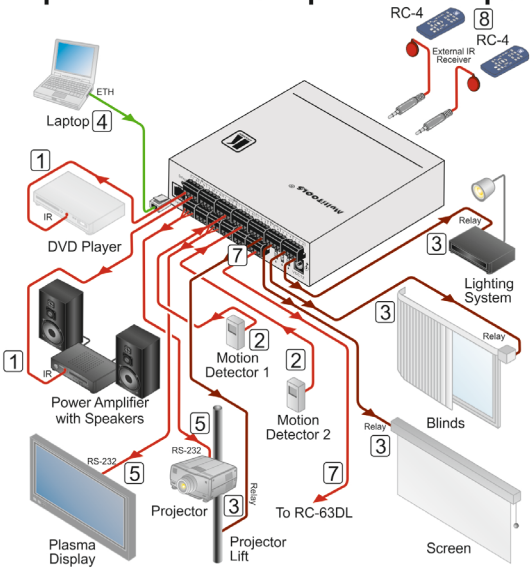


Save the original box and packaging materials in case you need to return your product for service.

Step 2: Install the SL-12

Mount the machine in a rack (using the RK-13 rack adapter) or place on a table.

Step 3: Connect the inputs and outputs



Always switch off the power on each device before connecting it to your **SL-12**.

1. Connect the IR outputs
2. Connect the GPI/O ports
3. Connect the relays
4. Connect the Ethernet
5. Connect the RS-232
6. Connect the RS-485 (not shown)
7. Connect the K-NET
8. Connect the external iR receivers

IR INPUT FUNCTIONALITY

You can use up to two optional RC-4 IR transmitters as auxiliary control panels and control the unit via two of the three IR INPUTS

Always use Kramer high-performance cables for connecting AV equipment to the **SL-12**.

Step 4: Connect the power

Connect the12V DC power adapter to the **SL-12** and plug the adapter into the mains electricity.

Step 5: Operate the SL-12

Operate via the RC keypad, IR remote control, K-NET, or ETHERNET

3 Overview

The **SL-12** is a highly versatile controller that acts as an all-in-one control processor for control of A/V equipment—especially projectors and associated equipment—in any room (such as classrooms, boardrooms, or auditoriums). It streamlines operations and simplifies control by integrating audio, video, and computer-video sources into a centralized system.

The **SL-12** *Master Room Controller* features:

- An Ethernet port for controlling several AV products over ETH
- 4 general purpose I/O ports that can be configured as analog inputs, digital inputs, or digital outputs for interfacing with a variety of devices such as sensors, switches, LEDs, and relays
- 4 bidirectional RS-232 ports that control AV equipment such as projectors, LCD and PDP displays, power amplifiers, switchers and scalers
- 8 relay contact closure ports that control other room items related to the AV system such as raising and lowering drapes, the screen or the projector
- IR control on three inputs (one built-in receiver and two IR inputs on 3.5mm mini jacks) and four outputs (terminal blocks)
- IR Learning that learns commands from any IR remote
- 1 RS-485 serial port
- Compatibility with Kramer Site-CTRL software for network remote control and management over the Ethernet port
- A K-NET™ control channel that connects compatible user interfaces and supplies power and control data over a single cable
- A USB port for uploading a configuration file
- Status LEDs for all functions
- Flexible control via Ethernet, K-NET™, RS-485, IR receiver and external IR commands

4 Your SL-12 Master Room Controller

Figure 1 and Table 1 define the unit.

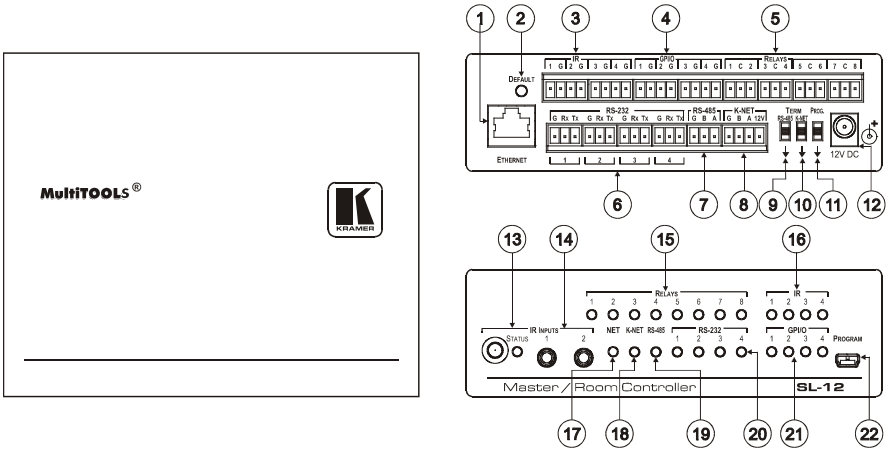


Figure 1: SL-12 Master Room Controller

Table 1: SL-12 Master Room Controller Functions

#	Feature	Function
1	*ETHERNET* RJ-45 Connector	Connects to the PC or other serial controller through computer networking LAN to control several AV products over Ethernet
2	*DEFAULT* Recessed Pushbutton	Press to reset to factory default definitions[1]: IP number – 192.168.1.39, Mask – 255.255.0.0, Gateway – 0.0.0.0
3	*IR* Output Terminal Blocks	Connect to IR emitter cables (from 1 to 4)
4	*GPI/O* Terminal Blocks	Connect to various analog and digital sensors (from 1 to 4)
5	*RELAYS* Terminal Blocks	Connect to low-voltage relay-driven devices (from 1 to 8)
6	*RS-232* Terminal Blocks	Connect to the RS-232 devices (from 1 to 4)
7	*RS-485* Terminal Block	Pins B (-) and A (+) are for RS-485; Pin G may be connected to the shield (if required)
8	*K-NET*[2] Connector	PIN GND is for the Ground connection[3]; PIN B (-) and PIN A (+) are for RS-485, and PIN +12V is for powering other units[4]
9	*RS-485 TERM* Switch	Slides down for RS-485 termination, slides up for not terminated
10	*K-NET TERM* Switch	Slides down for K-NET termination, slides up for not terminated
11	*PROG*. Switch	For service use only

1 First disconnect the power supply and then connect it again while pressing the DEFAULT button. The unit powers up and loads its memory with the factory default definitions and erases all stored presets

2 K-NET is a proprietary Kramer protocol for interconnecting Kramer units

3 The ground connection is sometimes connected to the shield of the RS-485 cable (in most applications, it is not connected)

4 Note that the SL-12 cannot receive power via the K-NET connector, but can power other units (but not another SL-12)

#	Feature		Function
12	*12V DC*		12V DC connector for powering the unit
13	*IR INPUTS*	Built-in receiver and STATUS LED[1]	Accepts IR remote commands
14		3.5mm Mini Jack[1]	Connect to an external IR receiver (1 and 2)
15	*RELAYS* LEDs		Illuminate when an relay is active (1 to 8)
16	*IR* LEDs		Illuminate when an IR port is active
17	*NET LED*		Illuminates when the Ethernet link is active
18	*K-NET* LED		Illuminates while transmitting over K-NET
19	*RS-485* LED		Illuminates while transmitting/receiving on an RS-485 port
20	*RS-232* (Tx/Rx) LEDs		Illuminate while transmitting/receiving on an RS-232 port (1 to 4)
21	GPI/O LEDS		Illuminate while transmitting/receiving on a general purpose I/O port (1 to 4)
22	*PROGRAM* USB Connector		Connect to a computer for unit configuration and firmware upgrading

5 Connecting the SL-12 Master Room Controller

To connect the **SL-12**, as the example in Figure 2 illustrates, do the following[2]:

1. Connect the RELAY terminal block connectors as follows:
   - Connect RELAY 1 and 2 to the projector lift
   - Connect RELAY 3 and 4 to the screen
   - Connect RELAY 5 and 6 to the blinds
   - Connect RELAY 7 and 8 to the lighting system
2. Connect the GPI/O ports as follows:
   - Connect GPI/O 2 to motion detector 1
   - Connect GPI/O 4 to motion detector 2
3. Connect the IR outputs as follows:
   - Connect an IR emitter[3] to IR OUTPUT 1 and attach the emitter to the DVD player
   - Connect an IR emitter[3] to IR OUTPUT 2 and attach the emitter to the power amplifier
4. Connect the IR INPUTS as follows[4] (see Section 5.2):
   - Connect IR INPUT 1 to an external IR receiver [5]
   - Connect IR INPUT 2 to an external IR receiver[5]

1 See Section 5.2

2 Switch OFF the power on each device before connecting it to your SL-12. After connecting your SL-12, switch on its power and then switch on the power on each device

3 P/N: C-A35M/IRE; two IR Emitter extension cables are also available: a 15 meter cable and a 20 meter cable

4 You can connect one or two inputs

5 P/N: C- A35M/IRR two extension cables are also available: a 15 meter cable and a 20 meter cable

5. Connect the RS-232 ports as follows:
   - Connect RS-232 port 1 to the projector
   - Connect RS-232 port 3 to the plasma display
6. Connect the RS-485 to several Kramer matrices, for example[1].
7. Connect the Ethernet port to a network.
8. Connect the K-NET port to any **RC** device with K-NET.

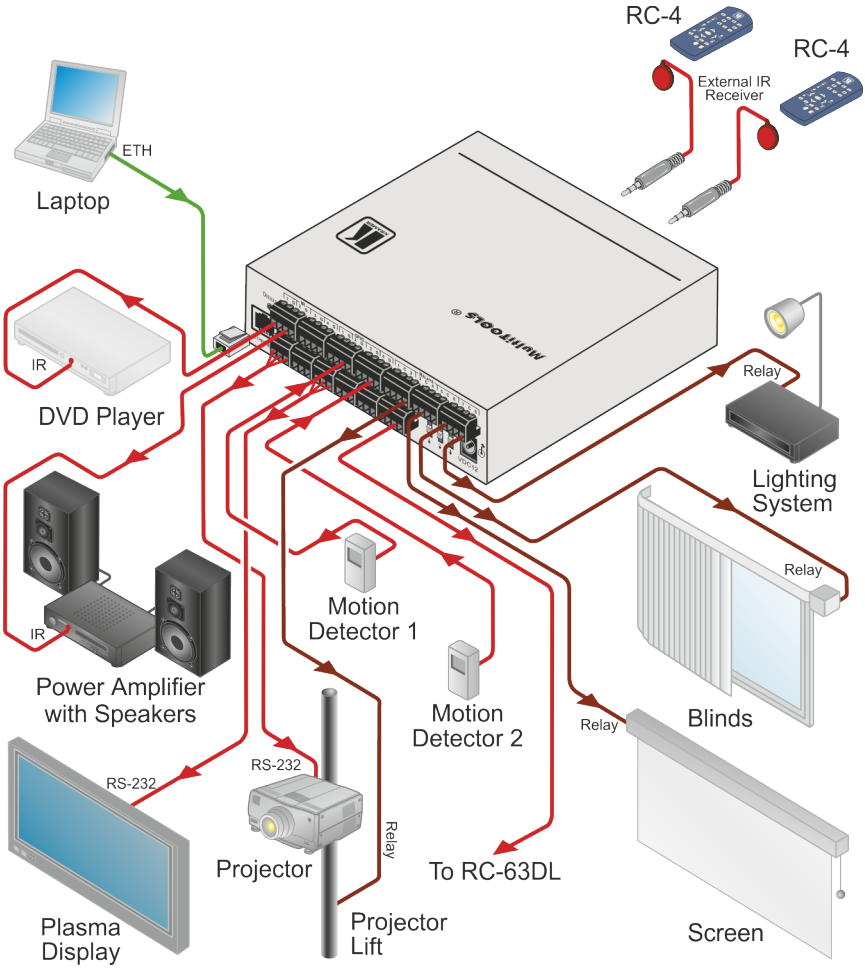


Figure 2: Connecting the SL-12 Master Room Controller

1 Not shown in Figure 2

5.1 Using the RC-4 IR transmitter

You can use up to two optional **RC-4** IR transmitters as auxiliary control panels and initiate configured control triggers—refer to the **K-Config** guide—via the built in IR receiver on the front panel, and/or via the optional external IR receiver[1], which exists in several cable lengths (shown in Figure 2).

5.2 IR Input Functionality

The **SL-12** front panel includes one built-in receiver and two IR inputs on 3.5mm jacks (shown in Figure 3) for control via the **RC-4**.

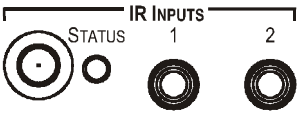
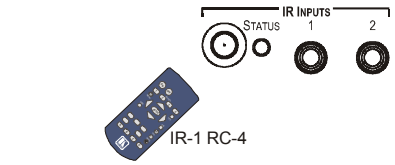
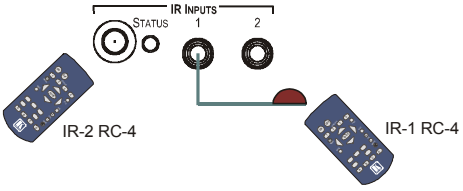


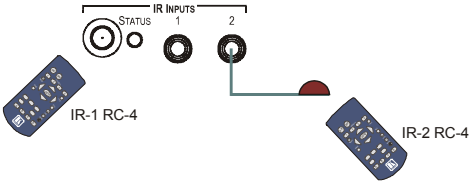
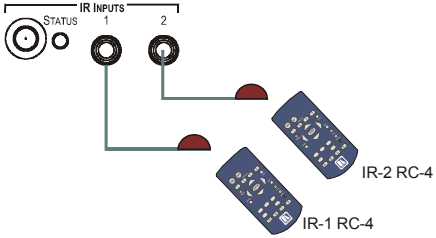
Figure 3: SL-12 IR Inputs

These three IR inputs can be set up differently, as defined in Table 2:

Table 2: IR Input Functionality

Status	Operation in K-Config
None of the external IR receivers are connected: 	**RC-4** controls the unit through the built-in receiver • Define IR-1 – RC-4 as the auxiliary device and set the triggers
An external IR receiver is connected to IR Input 1: 	One **RC-4** controls the unit through the built-in receiver and a second **RC-4** unit controls the unit through the IR Input 1 external IR receiver: • Define IR-2 – RC-4 as the auxiliary device for the built-in receiver and set the triggers • Define IR-1 – RC-4 as the auxiliary device for the external IR receiver connected to IR INPUT 1 and set the triggers

1 C- A35M/IRR

Status	Operation in K-Config
An external IR receiver is connected to IR Input 2: 	One **RC-4** controls the unit through the built-in receiver and a second **RC-4** unit controls the unit through the IR Input 2 external IR receiver: • Define IR-1 – RC-4 as the auxiliary device for the built-in receiver and set the triggers • Define IR-2 – RC-4 as the auxiliary device for the external IR receiver connected to IR INPUT 2 and set the triggers
Two external IR receivers are connected to IR Input 1 and IR input 2, respectively: 	One **RC-4** controls the unit through the IR Input 1 external IR receiver and a second **RC-4** unit controls the unit through the IR Input 2 external IR receiver: • Define IR-1 – RC-4 as the auxiliary device for the external IR receiver connected to IR INPUT 1 and set the triggers • Define IR-2 – RC-4 as the auxiliary device for the external IR receiver connected to IR INPUT 2 and set the triggers The built-in IR receiver is disabled

Note: when using two IR receivers, take care to place them in separate locations to prevent one IR receiver accepting transmissions that are sent to the other IR receiver

5.3 Connecting the RS-232 Interface

To connect an AV device to the **SL-12** using the RS-232 port, connect the RS-232 9-pin D-sub port on your device to the RS-232 terminal block on the rear panel of the **SL-12** as shown in Figure 4:

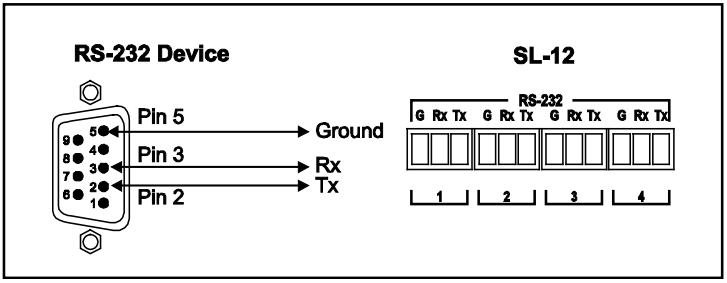


Figure 4: RS-232 Connection

5.4 Connecting the RS-485 Interface

To connect an AV device to the **SL-12** using the RS-485 port, connect the RS-485 port on your device to the RS-485 terminal block on the rear panel of the **SL-12** as shown in Figure 5:

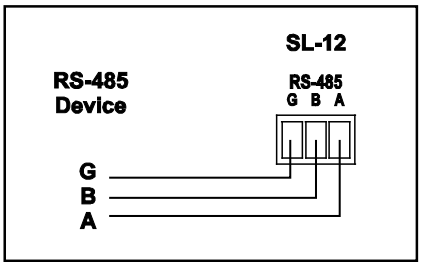


Figure 5: RS-485 Connection

5.5 Connecting the Ethernet Port

The Ethernet connection of the **SL-12** allows you to perform all control functions of the **SL-12** over the Internet using a PC running the Kramer Site-CTRL control program.

To connect the **SL-12** to a network:

1. Connect the Ethernet port of the **SL-12** to the Ethernet port on a network hub or network router, via a straight cable with RJ-45 connectors.
2. At the other end, connect the Internet to a PC running Site-CTRL.

After connecting the Ethernet port, you have to install and configure it. For detailed instructions on how to install and configure your Ethernet port, see the **K-Config** Guide[1].

1 Available for download at the Kramer Web site: www.kramerelectronics.com

5.6 Connecting the K-NET Port

The K-NET port is wired as shown in Figure 6.

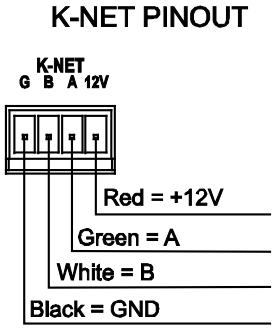


Figure 6: K-NET Pinout Connection

6 Operating the SL-12 Master Room Controller

You can operate your **SL-12** using:

- An RC family remote controller:
  To operate your device using an RC remote controller, see the Kramer **K-Config** Guide[1]
- The optional **RC-4** infrared remote control transmitter[2]:
  To operate your device using the infrared remote controller, see the User Manual packed with the remote controller
- A PC running **Site-CTRL** control software:
  To operate your device using **Site-CTRL**, see the **Site-CTRL** and **Web Access** Online User Guide[1]

1 Available for download at the Kramer Web site: www.kramerelectronics.com

2 The RC-4 is configured via the Kramer K-Config software

7 Technical Specifications

The **SL-12** technical specifications are shown in Table 3:

Table 3: SL-12 Master Room Controller Technical Specifications[1]

INPUTS:	4 RS-232, RS-485, 4 GPI/O and K-NET on terminal block connectors; Ethernet on an RJ-45 connector; 1 built-in receiver, 2 infrared on 3.5mm mini jack connectors; 1 USB for programming
OUTPUTS:	4 infrared, 8 relays (36V AC or DC, 2A, 60VAC maximum on non-inductive load) and 4 GPI/O on terminal block connectors
DEFAULT IP SETTINGS:	IP number – 192.168.1.39; Mask– 255.255.0.0; Gateway – 0.0.0.0
INDICATORS:	LED indicator for each function
POWER SOURCE:	12V DC, 290mA
DIMENSIONS	14.3cm x 12.2cm x 4.4cm (5.6" x 4.8" x 1.7") W, D, H
WEIGHT:	0.6kg (1.4lbs)
ACCESSORIES:	Power supply
OPTIONS:	RK-13 19" rack mount, RC-4 remote controller, IR emitter cables[2], IR sensor cable[3]

1 Specifications are subject to change without notice

2 P/N: C-A35/IRE-10; two IR Emitter Extension Cables are also available: a 15 meter cable and a 20 meter cable

3 P/N: 95-0104050

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A “CONSUMER PRODUCT” UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

P/N: 2900-000552 Rev: 3

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000552 REV 3